

Results of three quantitative predictions based on past regularities about voter turnout at the French 2009 European election

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Abstract

Twelve turnout rates of French national elections by municipality have shown statistical regularities, neither depend on the nature of the election, nor on the national turnout level. Three quantitative predictions about voter turnout at the French 2009 European election were made in arXiv:physics/0905.4578. Here, we give the results of these three predictions. Each one is confirmed by real measures.

A physicist overview of electoral studies is made in [1]. In this paper we give the results of the three predictions made in [2] about the voter turnout of the French 2009 European Parliament election.

This election was held on June 7, 2009. For metropolitan France, there were $42.4 \cdot 10^6$ registered voters [3], and the turnout rate was 41.4%. Notations in this paper are the same as in [2].

1. Standard deviation of τ^α

Previous, predicted, and real standard deviation of τ^α (see section 1 in [2]) over all the α municipalities, are:

	Previous measures	Expected measure	Real value
Standard deviation of τ^α	0.376 ± 0.019	[0.338; 0.414]	0.360

(In the above table like in the next two ones, *Previous measures* is written as (*mean* \pm *standard deviation*), and the prediction is given within an arbitrary *two sigma*.)

2. Correlation of σ_0^α at different elections

Previous $C_{t_i, t_j}(\sigma_0)$ for all couples of different elections (see section 2 in [2]); predicted and real averages of $C_{t_i, t_j}(\sigma_0)$ for couples constituted by the 2009 European election and one of the twelve former elections, are:

	Previous measures	Expected measure	Real measure
$C_{t_i, t_j}(\sigma_0)$	0.567 ± 0.058	[0.451; 0.683]	0.577

(Tab. 1 gives the twelve $C_{t_i, t_j}(\sigma_0)$, where t_i is one of the past twelve elections and, t_j , the 2009 European Parliament election.)

3. Correlation between σ_0^α and π_0^α

Previous, predicted and real correlation between σ_0^α and π_0^α (see section 3 in [2]) are:

	Previous measures	Expected measure	Real measure
Correlation between σ_0^α and π_0^α	0.645 ± 0.026	[0.593; 0.697]	0.657

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[2] dealt with a relatively simple phenomenon: the participation in French national elections. Three regularities have been observed for the past twelve turnout rates per municipality (or “commune” of France). Three predictions based on past statistical regularities were made for the French 2009 European Parliament election. Real results are in agreement with these predictions.

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References

- [1] C. Castellano, S. Fortunato and V. Loreto, *Statistical physics of social dynamics*, Rev. Mod. Phys. **81**, 591-646 (2009).
- [2] Ch. Borghesi, *Three quantitative predictions based on past regularities about voter turnout at the French 2009 European election*, arXiv:physics/0905.4578.
- [3] Data are from the *bureau des élections et des études politiques* of the French Home Office.

92-b	94-m	95-m	95-b	99-m	00-b	02-m	02-b	04-m	05-b	07-m	07-b
0.534	0.585	0.533	0.529	0.648	0.622	0.539	0.537	0.679	0.596	0.532	0.589

Table 1: $C_{t_i, t_j}(\sigma_0)$, where t_i is one of the previous twelve elections and t_j , the 2009 European Parliament election. The mean value is 0.577.